[0033] **CLAIMS**

[0034] We claim:

[0035] 1. A method of removing a portion of the elemental mercury in a flue gas created during the combustion of a fossil fuel, comprising:

providing a bromine containing reagent to said flue gas;

promoting the oxidation of elemental mercury with the bromine containing reagent;

creating an oxidized form of mercury from the elemental mercury; and

removing the oxidized mercury from the flue gas.

[0036] 2. The method according to claim 1, wherein the fossil fuel is coal.

[0037] 3. The method according to claim 1, wherein the step of providing the bromine containing reagent comprises the step of treating the fossil fuel with the bromine containing reagent prior to combustion.

[0038] 4. The method according to claim 1, comprising the step of treating the flue gas with the bromine containing reagent.

[0039] 5. The method according to claim 1, wherein the bromine containing reagent is provided in an aqueous form.

[0040] 6. The method according to claim 1, wherein the bromine containing reagent is provided in a solid form.

[0041] 7. The method according to claim 1, wherein the bromine containing reagent is provided in a gaseous form.

[0042] 8. The method according to claim 3, further comprising the step of pulverizing the fossil fuel.

[0043] 9. The method according to claim 8, wherein the pulverizing step occurs after the treating step.

[0044] 10. The method according to claim 2, wherein the coal is treated with up to about 1000 ppm of bromine from the bromine containing reagent.

[0045] 11. The method according to claim 10, wherein the coal is treated with between about 100 and about 200 ppm of bromine from the bromine containing reagent.

[0046] 12. The method according to claim 1, wherein a substantial portion of the elemental mercury in the flue gas is oxidized.

[0047] 13. The method according to claim 1, further comprising the step of using a wet flue gas desulfurization apparatus to remove a substantial portion of the oxidized mercury from the flue gas.

[0048] 14. The method according to claim 1, further comprising the step of using a spray dryer flue gas desulfurization apparatus to remove a substantial portion of the oxidized mercury from the flue gas.

[0049] 15. The method according to claim 1, further comprising the step of using a sorbent injection system to remove a substantial portion of the oxidized mercury from the flue gas.

[0050] 16. The method according to claim 15, wherein the sorbent comprises powdered activated carbon.